GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA

UNSTARRED QUESTION NO:2844
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Forecast of Natural Calamities
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Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Indian sub-continent is among the most disaster prone areas in the world and if so, the details thereof and the reasons therefor;

(b) whether the Department of Meteorology has been able to forecast natural calamities accurately and if so, the details thereof;

(c) whether adequate technology is available in the country to forecast natural calamities such as earthquake, cyclone, drought and floods etc. and if so, the details thereof and if not, the reasons therefor along with the action taken/proposed to be taken by the Government in this regard;

(d) whether the Government has drawn any action plan to ensure safety of life and property in the event of natural calamities and also to install early warning systems in all the States; and

(e) If so, the details thereof and the time by which such mechanism is likely to be put in place?

Answer

The MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(SHRI Y. S. CHOWDARY)

(a) The Indian sub-continent is amongst the most earthquake prone areas in the world. Earthquakes occur along the "Alpine-Himalayan belt", which also runs through the Andaman Sumatra arc, Indo-Burmese arc, and Himalayan arc. The continued collision/ subduction of Indian plate with the Eurasian and Sunda plates causes these earthquakes. A few earthquakes also occur within the peninsular shield region of India, which are grouped under intra-plate category and occur due to internal deformation of the plate.

(b) Yes Madam. Earth System Science Organization (ESSO) -India Meteorological Department (IMD) is responsible for monitoring, detection and forecasting of weather and climate extremes including severe weather events such as cyclones, heavy rainfall, extreme temperature etc. Such forecasts are issued at national, regional and state levels. In order to provide early warning of severe weather events, ESSO-IMD has setup a network of state meteorological centres to have better coordination with a state and district level agencies.

ESSO-National Center for Seismology (NCS) is monitoring earthquake activity in and around the county round the clock through its national seismological network along with other global/regional seismicity monitoring networks.

Monitoring of the seasonal (monthly / weekly rainfall scenario with reference to respective normal (mean value) is only carried out by ESSO-IMD to regularly assess and identify zones of deficit rainfall leading to drought conditions, the declaration of which remains with the mandate of Ministry of Agriculture in consultation with various state governments.

ESSO-IMD is using various Numerical Weather Prediction (NWP) products like Global Forecast System (GFS) , Weather Research and Forecasting Model (WRF), Hurricane Weather Research and Forecast (HWRF) Model, Other global and region models like European Center for Medium range Weather Forecasting (ECMWF), U.K. Met Office (UKMO), Japan Meteorological agency (JMA), National Centre of Medium Range Weather Forecasting (NCMRWF) and techniques like Multi-model ensemble (MME) technique , Ensemble prediction system (EPS), Global Ensemble Forecast System (GEFS) for generating most representative operational forecasts.
Performance of NWP models have improved considerably due to large scale integration of local data & global & satellite information, which ultimately is contributing to improved forecasts.

In order to meet specific requirements of flood forecasting which is provided by central water commission, ESSO-IMD operates Flood Meteorological Offices (FMOs) at ten locations viz., Agra, Ahmedabad, Asansol, Bhubaneshwar, Guwahati, Hyderabad, Jalpaiguri, Lucknow, New Delhi and Patna. During the flood season, FMOs provide valuable meteorological support to the Central Water Commission (CWC) for issuing flood warnings in respect of the 43 rivers of India. CWC is working in close association with IMD and State Governments for timely flood forecast whenever the river water level rises above warning level. To meet the requirement of State

Governments, ESSO-IMD Officers invariably attend all the meetings called by the State Governments for reviewing the preparedness on floods by various agencies.

(c) ESSO-IMD and ESSO-NCS have existing mechanism to coordinate with various state authorities. As such ESSO-IMD provide inputs to State Crop Weather Watch Group, State Disaster Management Authorities, Relief Commissioners. During cyclones a coordination mechanism with district authorities has also been established. Round the clock weather surveillance and forecasting system is operational at ESSO-IMD for continued monitoring, detection and warning of Cyclones; river basin scale meteorological support (monitoring and warning) for CWCs river flood warning system and other severe weather systems.

Operational forewarning systems are already in place by the CWC for river basin scale flood. Fully organized protocol exists between ESSO-IMD, CWC and with the various designated disaster management authorities at centre and state levels for dissemination of weather forecasts and warning alerts.

(d-e) The Indian Tsunami Early Warning Centre (ITEWC) has all necessary infrastructure and capabilities to give tsunami advisories to India as well as to Indian Ocean countries. ITEWS has been designated as one of the Regional Tsunami Service Providers for the entire Indian Ocean Region by the Intergovernmental Oceanographic Commission (IOC) of UNESCO on 12 October 2011. Since then, ITEWC is providing tsunami warnings and related services to all countries in the Indian Ocean Rim (24 Countries) beyond fully serving the India's coastline / Islands.

The centre is capable of detecting tsunamigenic earthquakes occurring in the Indian Ocean as well as in the Global Oceans within 10 minutes of their occurrence and disseminates the advisories to the concerned authorities within 20 minutes through email, fax, SMS, GTS and website.

Bureau of Indian Standards (BIS) has published several guidelines and building codes for construction of earthquake resistant structures and for retrofitting of existing buildings. These guidelines are in wide circulation amongst the public and the administrative authorities responsible for the design and construction of earthquake resistant structures in earthquake prone areas.

National Disaster Management Authority (NDMA), Ministry of Home Affairs (MHA), Ministry of Earth Sciences and other state Disaster Management Authorities, have also taken up various initiatives to educate and enhance awareness amongst general public and school children on the general aspects of earthquakes, their impacts and measures to mitigate losses caused by them. A National Disaster Response Force (NDRF) is also functional under the general superintendence, direction and control of the NDMA for the purpose of specialized response to natural and man-made disasters.

Markets, schools, hospitals and Railway and Bus stations, airports etc. are regularly sensitized by organizing mock drills and information dissemination relating to evacuation and steps to be taken during rescue and relief operations.

In addition satellite based, Cyclone Warning Dissemination System (CWDS) comprising 222 CWDSs have been installed in Andhra Pradesh (134), Odisha (44), Tamilnadu (42) and Pondicherry (02).